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BOOK NUMBER

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## WHAT IS EVIDENCE

After you have selected and defined the objective for evaluation and the work you did to reach it, the next step in the development of your evaluation plan is to determine the evidence you will need to look for so you will know the situation that exists or that your objective has been reached, or that you are going in the right direction. This is true regardless of the evaluation procedure you will follow -- whether you will use office records, make a home visit to determine the progress made by a cooperator or demonstrator, or carry out a survey of the people whom you have been trying to reach.

Our use of the word "evidence" is in accord with the dictionary definitions of it: "An outward sign. Indication. That which furnishes any mode of proof."

How can you determine the status, or tell that you have made progress toward or attained your goal? What is the evidence (or the outward sign, the indication, the proof) of the status or progress? Teaching is successful when it has caused a change in the desired direction. Evidence is not always obvious. Unfortunately, the human being is a complicated creature. Changes occurring in him are not always plain to the naked eye. The objective chosen for evaluation, as we have seen, must be in terms of his behavior.

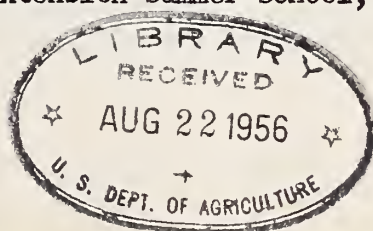
Behavior, when considered as the result of education, is often not in terms of an immediate physical action. It may be in terms of an improvement in skills, a better understanding of a concept, an increased ability to solve problems, a changed attitude, an appreciation of different things, a shifting of values, a change of interests, an increase in knowledge. Evaluation is made in terms of evidences of these changes in behavior. The adoption of a recommended practice, frequently used in extension research as a measure of educational outcomes, is a symbol of change in behavior on the part of a farmer or homemaker. It is evidence that the individual has acquired some new knowledge, skill or attitude.

To determine the types of behavior you will measure, a careful check must first be made of the types of changes of behavior you have been or will be trying to bring about by your extension teaching. This can be done by two different procedures of studying your program and plan of work.

First, an examination of the objectives of your teaching should reveal the changes in behavior which you hope to bring about in the people. The plan of work may contain the following objective, - to increase peach production in the county. The changes in behavior expressed in this objective may be, - the farmers pruning properly, spraying at the right times, etc. An analysis of the teaching objectives is one way of determining the kinds of changes in behavior you hope to bring about.

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Prepared in the Division of Extension Research and Training - for use in  
Extension Evaluation Course, Regional Extension Summer School, University  
of Arkansas, 1955.





A second procedure for determining the kinds of behavior changes is to examine the different teaching methods and activities in your plan of work and identify the changes in behavior you expected to result from exposing the people to each one of those teaching methods or activities. As you do so ask yourself, "What change in behavior did I expect as a result of this teaching method or this activity?"

A radio talk may be aimed at producing a desired action or at increasing the knowledge of the listeners. A recipe in a newspaper may be designed to encourage people to use food more economically, tastefully, or nutritionally. The radio talk, news article, or project lesson may be aimed at teaching why this is important. A tour may have been organized as a visual demonstration to convince the viewers of the value of a recommended practice or practices.

By means of these two procedures of analyzing teaching objectives and examining teaching methods and activities you can determine the kinds of changes in behavior to be measured.

### Levels of Attainment at Which to Measure

Measurement may take place at three levels of attainment, (1) at the beginning to establish a bench mark, (2) during the process of conducting extension work to determine progress, and (3) at the end of the program.

The first level of attainment is before any change or any further change occurs - the people's behavior before Extension has done any teaching or has done further teaching. This place or level from which the people start in their change of behavior is sometimes called the bench mark. The decision of whether or not to establish a bench mark has to be made at this step in the evaluation outline. If you want to know what progress has been made it is essential to have some idea of the bench mark. If you know pretty well what it is, there is no need to put forth effort to establish it. If you are mainly interested in whether the goal is reached and not in how far people progressed to reach that goal, it is not necessary to determine the bench mark.

A second level is at any step in the progress of the people toward the ultimate goal of the objective. When a long-time objective has been set up, progress evaluations are often necessary to tell you if the people are making any progress, to tell you if the teaching methods you are using are effective, to tell you which teaching methods are most effective, to tell you which steps have been accomplished and which ones should be further emphasized in the program of work.

Measurement at the third level of attainment is to determine the accomplishment of the final goal of the objective. When you find out if few, some, or all the people have reached that goal, you know whether to retain the objective in your plan of work or to introduce a new one: You can find out whether certain teaching methods have been effective or not, and under what conditions.

Measurement at two levels of attainment may be incorporated into one testing program or device. Because it is often necessary to establish a base measurement, the evaluation plan may call for two levels: The bench mark level together with the progress, or the attainment-of-goal level.

## Two Major Types of Evidence

There are two major types of evidence that can be used in evaluating Extension work. One type of evidence is in terms of the number of teaching methods used, activities engaged in, people attending meetings or other learning situation, enrollment in clubs, and so on. The second major type of evidence is in terms of the changes in people expected as a result of extension teaching.

The first type of evidence shows that Extension workers did something to bring about changes in people and the number of people exposed to learning situations. If no written materials go out on a given subject, no talks are given, no demonstrations put on, no visits made; then one cannot expect the people to have learned anything as a result of extension work. Also, it is logical to assume that meetings which have 1,000 people in attendance have a greater chance of changing behavior of many people than no meetings at all, or meetings with attendance of 100.

The more or the better the opportunity provided the better the chance of accomplishment. A well-organized and well-attended 4-H Club event should offer better opportunity for boys and girls to develop than a poorly-organized and poorly-attended event.

Therefore, measuring the "goodness" of organization, of attendance of coverage, of subject matter, of teaching methods used gives some indication of successful Extension work. They are the easier measurements to make and provide understandable working material for evaluation. They do not, however, measure the quality of educational change in behavior of the people who were reached by Extension work.

If these measures are not adequate evidence of a bench mark, or of programs, or of having reached a goal, it is necessary to measure in terms of the changes in people such as changes in knowledge, attitudes, skills and thinking, expected as a result of extension work.

The second type of evidence is the behavior of people. It consists of the changes that have taken place:

- (1) In the people themselves. Have they - the farmers, homemakers, or young people - changed in their knowledge, attitudes, skills, or thinking as a result of the Extension activity or method?
- (2) In the county extension agents, local leaders, officers, and so forth, whom you are teaching or training so that they can help the people learn something new.

## Factors in Determining Which Evidences of Behavior to Look For

Our problem next is to decide which changes in people are to be considered as evidences of a bench mark, progress, or goal attainment. There are several points to consider in selecting these evidences.



(1) Facility in measuring. -- An important factor in deciding which behavior you will measure is your own facility in measuring different types. There is no question but that it is easier to measure changes of behavior which have tangible evidences for proof than it is to measure those which have intangible evidences. The fact that a woman has made use of a recipe she has seen in a paper is easier to determine than the fact that she now better understands the value of good nutrition in child development. The fact that a family gathers around the table to plan the duties of each family member is not difficult to ascertain. But whether the family now gets along better as a result of this planning around the table is an intangible result that is hard to determine.

To measure the real results of extension teaching, we cannot ignore these intangible results just because they are difficult to measure. On the other hand, when one is becoming accustomed to the procedure of evaluation, it is highly desirable that the techniques, methods, and procedures of evaluation be learned while measuring those results which are easier to measure -- such as practices adopted. When the evaluation techniques are mastered, they can be applied to that type of measurement which is more difficult. Just as we learn to read by starting with simple words, short sentences, and simple stories, so we learn evaluation methods by starting with the simple, and advancing to the more difficult. If you do begin with the easier methods, it should be clear that evaluation is not concerned only with results that you can see and count at the present time.

(2) Limiting number of evidences. -- If your list of evidences is very brief, and to look for them all would not require too much work, include them all in your plan. If your objective for study has been defined and limited so that it means only one, or a very few actions or changes in behavior, only one or very few evidences need to be looked for.

However, there are more often numerous evidences of change of behavior. When such is the case, there are ways of selecting those which you will look for in your measurement:

(a) Study them over to see which indicate the most important changes in behavior. If you cannot look for all changes, certainly those you consider most important will be of most value to you.

(b) If your long list cannot be reduced by the above method, your list can be reduced by choosing at random a practical number of them. Random Methods of selection will be explained fully in the chapter on Sampling.

(3) The time factor must be considered. -- Seldom is a change of behavior, whatever the type, apparent immediately upon reception of the teaching. For types of changes such as in attitude, appreciation, knowledge, or values, the change may take place immediately. However, even in many of these cases the respondent needs time to think over the material, weigh it in his mind, and be exposed again to his customary sources of information, before a change that has any permanency takes place. Knowledge which is evidenced immediately after a presentation of the material may be forgotten by the next day.



When the change of behavior desired is a change of practice, the time element is extremely important. First, some things cannot be done until for example, a certain season has arrived, an opportunity has arisen to get certain materials, money is available to buy what is needed, or the family is all together. Some things take a long time to do, such as remodeling a house. Some things take place in stages as planting a garden, harvesting it, canning the food, and serving balanced meals all during the winter.

In planning the study, therefore, it must be decided when you can reasonably try to find out if a certain practice has been adopted. Judgment must be used in this phase. We do not know exactly how long after a person has had a chance to carry out a practice, and does not do so, we should wait to see if he is ever going to do it. The longer he waits, certainly the less likely it is that he will ever carry it out.

But, on the other hand, there is a limit to the time we can wait and still expect to find out what was done in the past. For daily happenings, 2 or 3 days can break up the memory span. Regarding seasonal activities, one can expect a respondent to remember an important one during the rest of the year.

When reporting memory items, it should be explained that the data are from memory and not from records, as memory does distort data - increasing them if a large number is desirable, decreasing them if a small number is desirable. For some types of information, you will find you will need to collect data at two different times, because of the time element entering differently into the different actions or behaviors desired.

(4) In what units or terms will evidences be summarized? -- Will they, for example, be by degrees of attainment, amounts of things accomplished, or length of time an action has been carried out? Will your evidence of an adequate garden be in terms of kinds of vegetables raised, in amounts of certain vegetables canned and stored, or in other terms? Will evidence of an adequate canning budget be the average number of quarts of vegetables per person, or will it be the percentage or proportion of the people who canned a recommended average, or a minimum amount? Which will be the evidence you want, or will need, to form a basis for your analysis?

#### Determining the Population From Whom to Collect Evidence

That group of people in whom you are interested in helping make a behavior change comprises the population which you will attempt, or have attempted, to reach through your educational methods.

The educational or organization objectives of the project or activity on which you are working determine which people are included in the population. An objective which aims at farmers learning improved dairy-herd improvement practices limits the population to those farmers who have dairy herds, or will have dairy herds in the near future. An objective which has to do with homemakers learning better child nutrition practices limits the population to those women who have children to feed. An organizational objective which is set up for a county extension council of local 4-H leaders limits the population to local 4-H leaders.

This determination or definition of the population should be done at the time the teaching or organizational plan is made up. If it was not done at that time, it has to be done before evaluation can be carried out.

The educational or organization methods used in attempting to reach the objectives usually limit the population to a selected group within the population described above. Although it is desirable to reach all dairy farmers or all homemakers with children, or all local 4-H leaders, it is often impossible to do so. Only those who are reachable with the methods used are included in the population which can provide evidence for evaluation. Four-H Club members are the obvious population being reached through 4-H Club methods. Only the dairy-project members are those reached through dairy-project work.

It is always possible that there is a larger population than the one which is carefully defined and limited by the teaching methods used. This larger population may include friends and neighbors of the defined population, or other family members. However, it is not easy to define this larger, less definite population. Arbitrarily defining it on criteria based on hopes and what seems logical to the teacher (county agent or specialist) may result in an inaccurate definition. Special surveys and studies can be made for the specific purpose of determining who is in the broader population.

In your program planning, you decide whom you would like to reach or teach. Then, by the methods you use, you define or limit those you do reach or teach.

What you do as a teacher or organizer, and how you do it, determines the population from whom you can collect evidence of a bench mark, progress, goal or attainment.

Who is in the population, and where they are, determines the methods you will use in collecting the evidence.

These two last sentences include such an important sequence of action and decision in the evaluation process that the ideas bear repeating: The "what" and the "how" of the teaching process determine the population; the population determines the method used in gathering evaluation information.

#### Situation in Which Measurement Can be Carried Out

After deciding which evidences you are going to look for in order to evaluate your progress or the need for a program, and after deciding the population from which to collect evidence, you will need to look for situations in which you can find this evidence -- situations also which lend themselves to measurement.

People must have had a chance to display the change of behavior you are trying to bring about. We must decide where we will find the people whom we have been trying to help, and find them in situations where they can have made changes because of the educational process to which they were subjected.

This is not usually a problem within the bounds of the more common agricultural and homemaking teaching in Extension Service work. Farmers and homemakers have freedom to put into practice on their farms or in their homes, what they have



However, in connection with programs such as public policy, foreign relations, and 4-H Club work, one must give careful thought to the situations in which the individuals will have a chance to display a change of behavior brought about by Extension teaching.

### Descriptive Information or "Face" Data Needed

"Face" data are descriptive information you need to obtain from or about the same specific individuals from whom you get your evidence. It includes information such as years of schooling, age, size of farm, number of children in the family, and so on. "Face" data are used for three major purposes which are as follows:

- (1) Classification of the individuals in the analysis of the replies.
- (2) Standardized questions in the comparison of one study with another.
- (3) Comparison of the sample of the population in a study with known facts about the whole population.

Classification of the individuals in the analysis of the replies. Usually it is desirable to find out if there is a difference in the replies of individuals with certain characteristics and those with different characteristics. This involves an analysis of the replies for which a classification is necessary. For example, if one wishes to discover the difference in replies between those who have had more formal schooling and those who have had less formal schooling, one would need to include a face data question on the number of years of formal schooling. If part-time farmers are to be compared with full time farmers, corresponding face data questions must be included.

Standardized questions in the comparison of one study with another. To compare the findings from one study with those of another study, the individuals in the one study must be comparable in certain respects with the individuals in another study. The findings in a study of farmers with large sized farms are not directly comparable with the findings in a study of farmers with small sized farms. If neither study has a face data question on size of farm, the findings from the two studies cannot be compared on this characteristic.

Comparison of the sample of the population in a study with known facts about the whole population. Frequently it is necessary to compare the sample of the population used in a study with the whole population, which the sample has been chosen to represent. This is done to check on the representativeness of the sample. It is a means of testing the sample.

Usually census data are used because they are data about the whole population. In such cases, face data questions which correspond with the census data must be included in the questionnaire. If the sample is to be checked with census data on rural farm and rural non-farm classification or on age, corresponding face data questions must be included.

When comparisons are made between one study and another or the the census data, it is also necessary for the face data questions to be in the same units or intervals.



This means that in the planning of a study and especially in the construction of the questionnaire, the analysis which will eventually be made of the results, must be given considerable thought. Think over the teaching methods used and the informational materials given to the people. What would you like to know about the people who made a change in behavior and about those who did not? Do you expect certain types of people to react more than others to your teaching? If you expect that people with certain mental or material possessions or surroundings will be more influenced by your teaching than will people with other mental or material possessions or in different surroundings, appropriate face data questions should be included.

Through the study you are seeking information which will help to ascertain differences between groups by means of analysis of the findings, to make comparisons with other studies and to check your sample. All of which is for the major purpose of truing up your work and making new plans for the next year's work.

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